

Unleashing the Power of Edge-Cloud Generative AI in Mobile Networks: A Survey of AIGC Services

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Abstract

Artificial Intelligence-Generated Content (AIGC) is an automated method for generating, manipulating, and modifying valuable and diverse data using AI algorithms creatively. This survey paper focuses on the deployment of AIGC applications, e.g., ChatGPT and Dall-E, at mobile edge networks, namely mobile AIGC networks, that provide personalized and customized AIGC services in real time while maintaining user privacy. We begin by introducing the background and fundamentals of generative models and the lifecycle of AIGC services at mobile AIGC networks, which includes data collection, training, fine-tuning, inference, and product management. We then discuss the collaborative cloud-edge-mobile infrastructure and technologies required to support AIGC services and enable users to access AIGC at mobile edge networks. Furthermore, we explore AIGC-driven creative applications and use cases for mobile AIGC networks. Additionally, we discuss the implementation, security, and privacy challenges of deploying mobile AIGC networks. Finally, we highlight some future research directions and open issues for the full realization of mobile AIGC networks.